Utah Energy

STATE ENERGY ADVISOR'S ANNUAL REPORT 2008 (Revised 10/16/08)

UTAH STATE LEGISLATURE
NATURAL RESOURCES, AGRICULTURE, AND ENVIRONMENT
INTERIM COMMITTEE
AND
PUBLIC UTILITIES AND TECHNOLOGY
INTERIM COMMITTEE

October 15, 2008

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STATE ENERGY ADVISOR'S ANNUAL REPORT 2008

OBJECTIVES OF REPORT

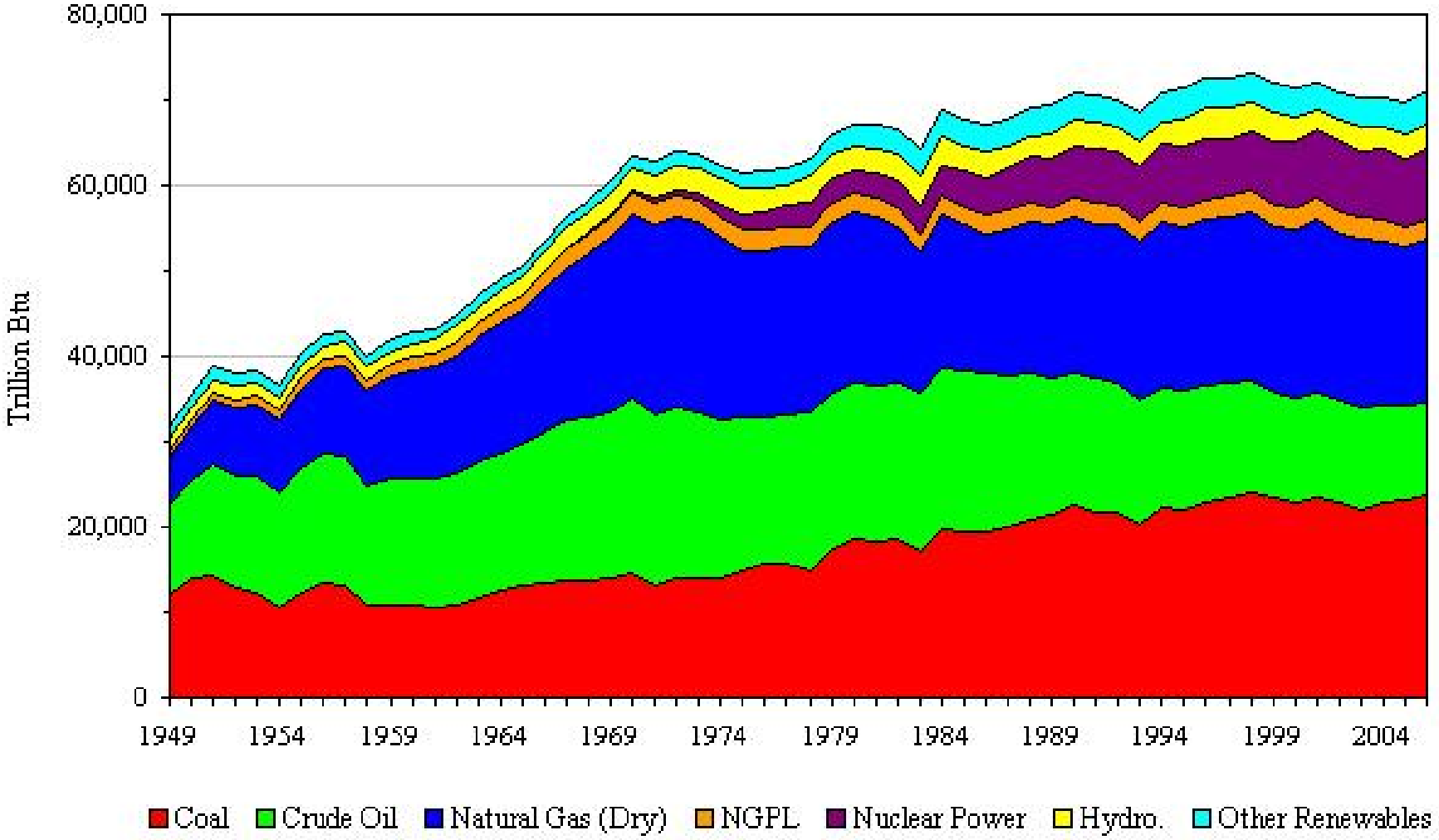
- Review Utah's energy resources production and consumption;
- Identify actions and challenges to energy development, extraction, production, refining, and transportation in 2008; and
- Consider the long-term issues and trends in Utah Energy.

UTAH ENERGY POLICY UCA 63-53b-301

Utah will:

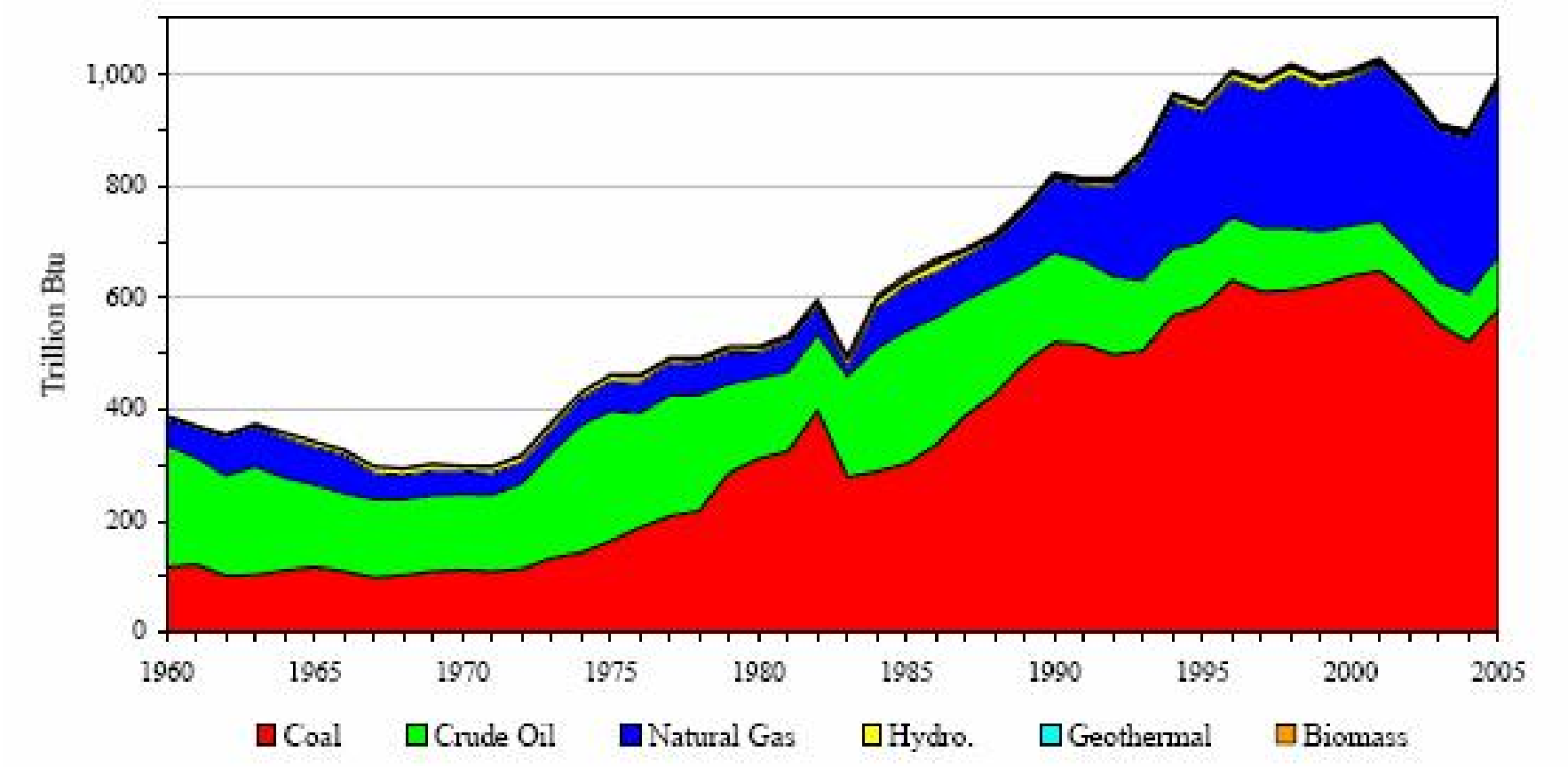
- Have adequate, reliable, affordable, sustainable, and clean energy resources;
- Promote development of nonrenewable resources;
- Promote development of renewable resources;
- Promote study of nuclear power;
- Promote development of resources and infrastructure reducing dependence on international energy sources;
- Pursue energy conservation, energy efficiency and environmental quality;
- Streamline regulatory processes;
- Encourage expedited federal action; and
- Provide an environment for stable consumer prices.

Figure 1.2a - Energy Production in the U.S. by Primary Source, 1949-2006



Utah Geological Survey *http://geology.utah.gov*

Energy Production in Utah by Primary Source



Utah Geological Survey *www.geology.utah.gov*

UTAH ENERGY RESOURCE EXTRACTION

Coal
Crude Oil
Tar Sands and Oil Shale
Natural Gas
Coalbed Methane
Renewable Resources

COAL PRODUCTION IN UTAH

Production – mines in Carbon, Emery, and Sevier Counties*

- 2006 26,131 tsT
- 2007 24,288 tsT
- 2008 24,880 tsT(est.)

Price (2008 est.)* $26.87

Coal Use

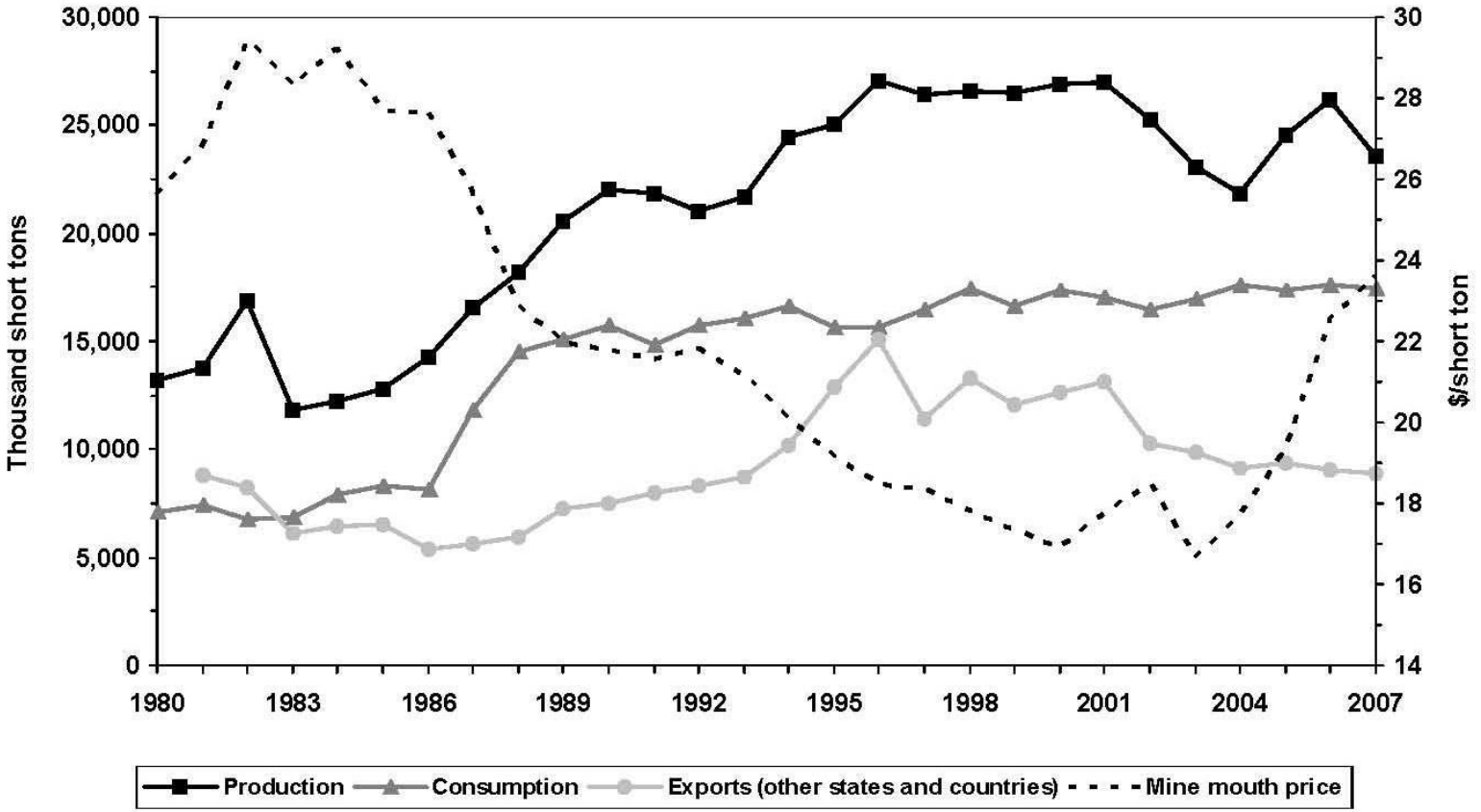
- Electric Utility
- Industrial
- Residential/Commercial

Key Issues

- Need operational carbon capture and sequestration with electricity generation (Greenhouse Gas reduction)
- Other Coal to Energy technologies (eg., coal-to-liquids)
- Mine safety

*Utah Geological Survey *http://geology.utah.gov*

Utah's Coal Production, Consumption, and Exports Plotted with Mine Mouth Prices



Source: Utah Geological Survey, U.S. Energy Information Administration

CRUDE OIL PRODUCTION IN UTAH

Production – Ranked 12th

19.7 million barrels (2007)

Drilling Permits

Oil and Gas	2007	permits	1552
	2008		1048

Crude Oil Use

Transportation Fuel

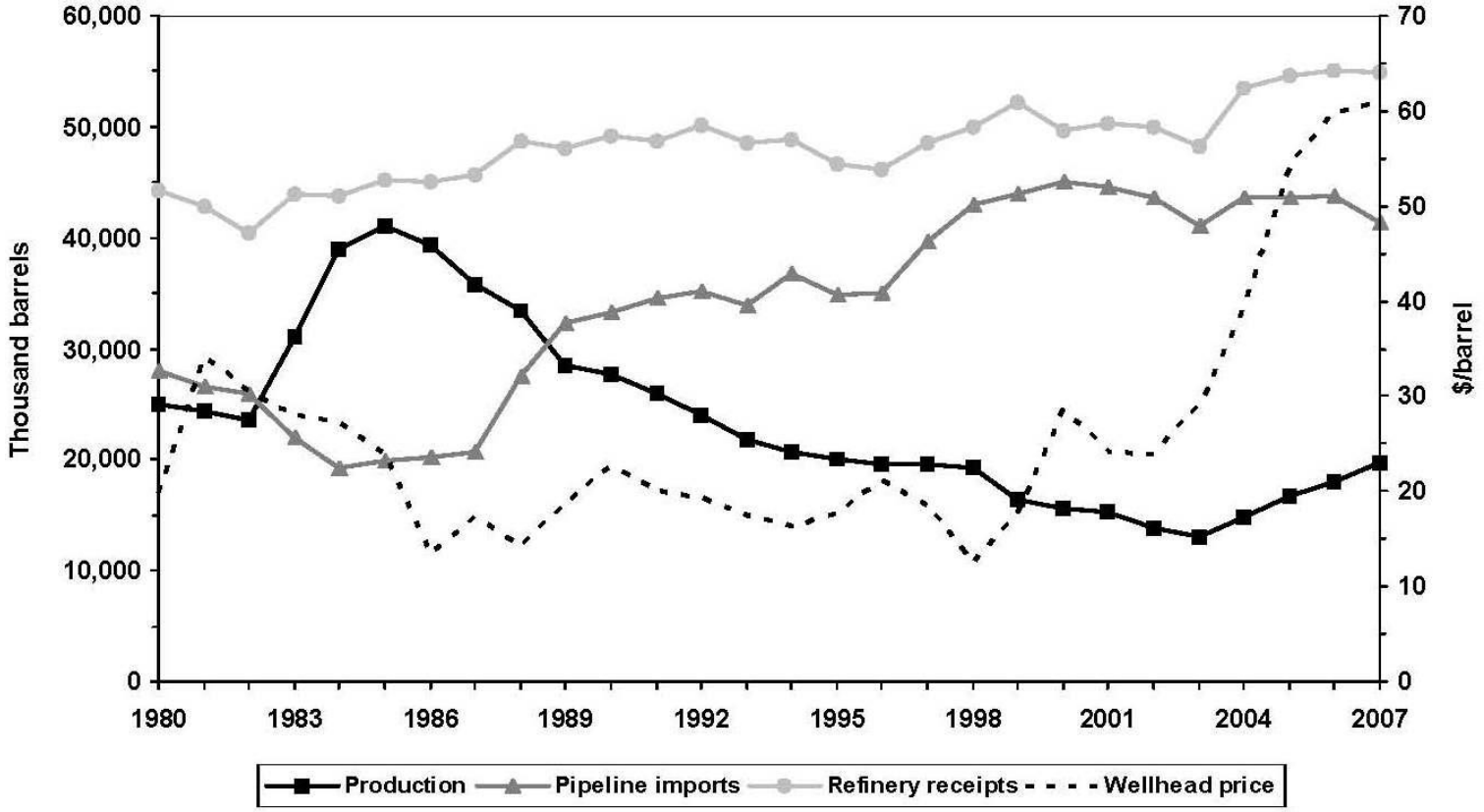
Industrial

Key Issues

- Price
- Exploration/Production Air Pollution
- Reduction of Greenhouse Gases
- Energy security

2008 Economic Report to the Governor
Utah Geological Survey *www.geology.utah.gov*

Utah's Crude Oil Production, Pipeline Imports, and Refinery Receipts Plotted with Wellhead Prices



Source: Utah Geological Survey, Utah Division of Oil, Gas, and Mining, U.S. Energy Information Administration

OIL SHALE AND TAR SANDS IN UTAH

Resource – Oil Shale Potential Economic Resource*

77 billion barrels

Utilization

Transportation Fuel

Industrial

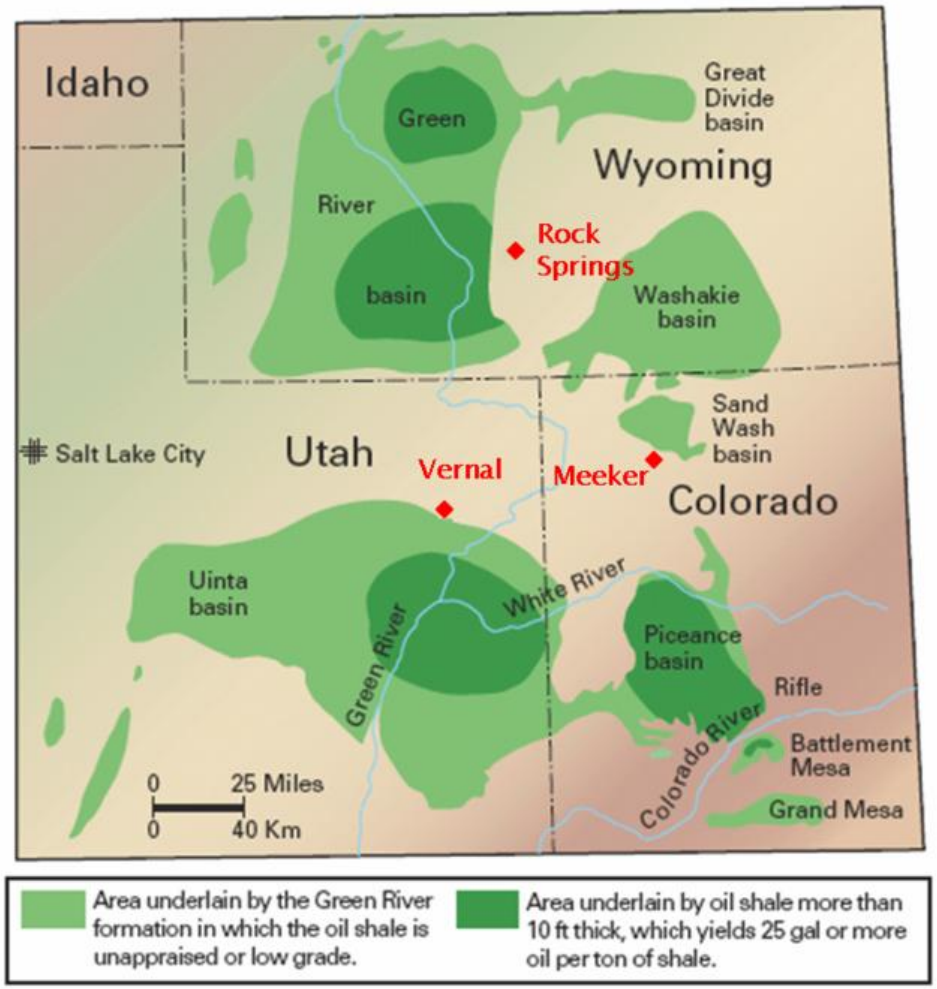
Key Issues

- Moratorium on BLM review
- Leasing
- Baseline Air Quality Study
- Reduction in Air Pollutants
- Reduction of Greenhouse Gases
- Energy Security
- Unconventional Fuels Reports – completed
- Production/Refining Technology

* Utah Geological Survey *www.geology.utah.gov*

Green River Formation

Oil Shale Basins



Tabet and VandenBerg, 2006

NATURAL GAS PRODUCTION IN UTAH

Production – Ranked 11th

Natural Gas	396.8 billion cubic feet (bcf)
Coalbed Methane	76.7 bcf

Natural Gas Utilization

Electric Utility
Transportation
Industrial
Residental/Commercial Heating

Key Issues

- Price
- Reduction in Air Pollutants
- Reduction of Greenhouse Gases
- Energy security
- Pipeline Right-of-Ways

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Figure 4.2 - Proved Reserves and Gross Production of Natural Gas in Utah, 1947-2006

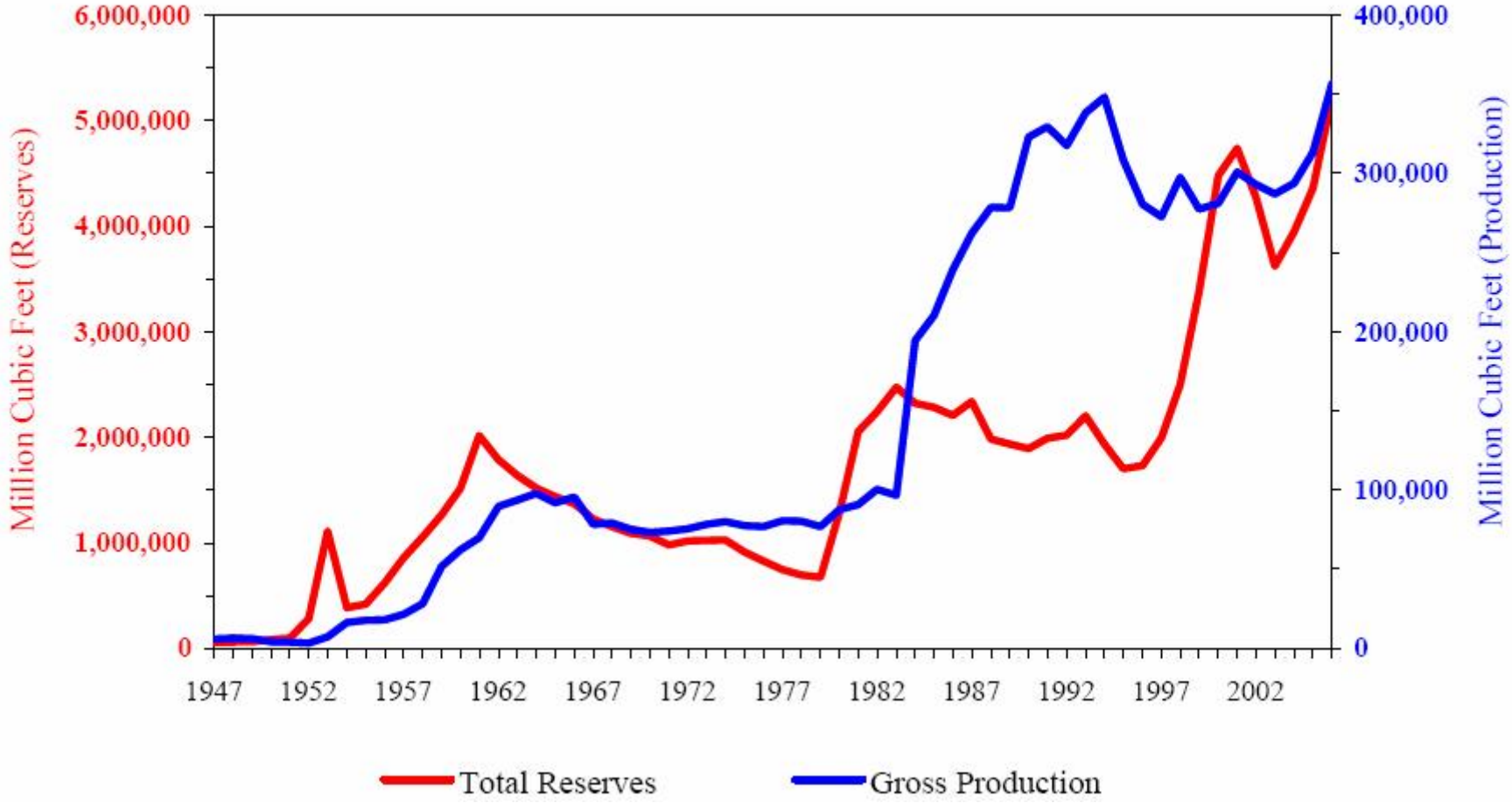
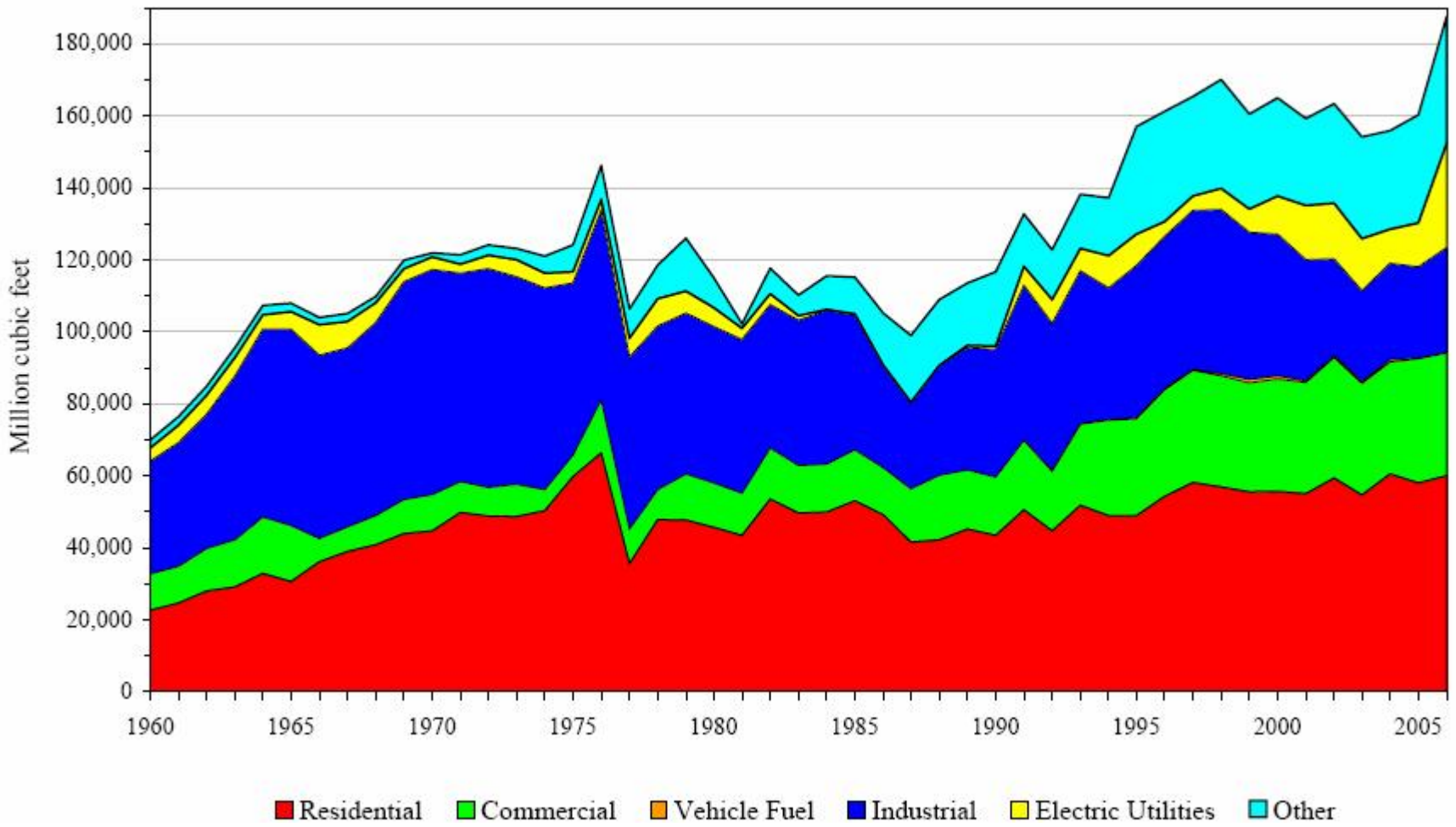


Figure 4.8 - Consumption of Natural Gas in Utah, 1952-2006



RENEWABLE RESOURCE PRODUCTION IN UTAH

Production

2007 2% of electricity generation

Renewables Use

Electric Utility

Distributed Energy Use

Ground Source Heating and Cooling

Key Issues

- Price
- Identifying resources and concentrations of renewables (Renewable Energy Zones)
- Transmission
- Energy security

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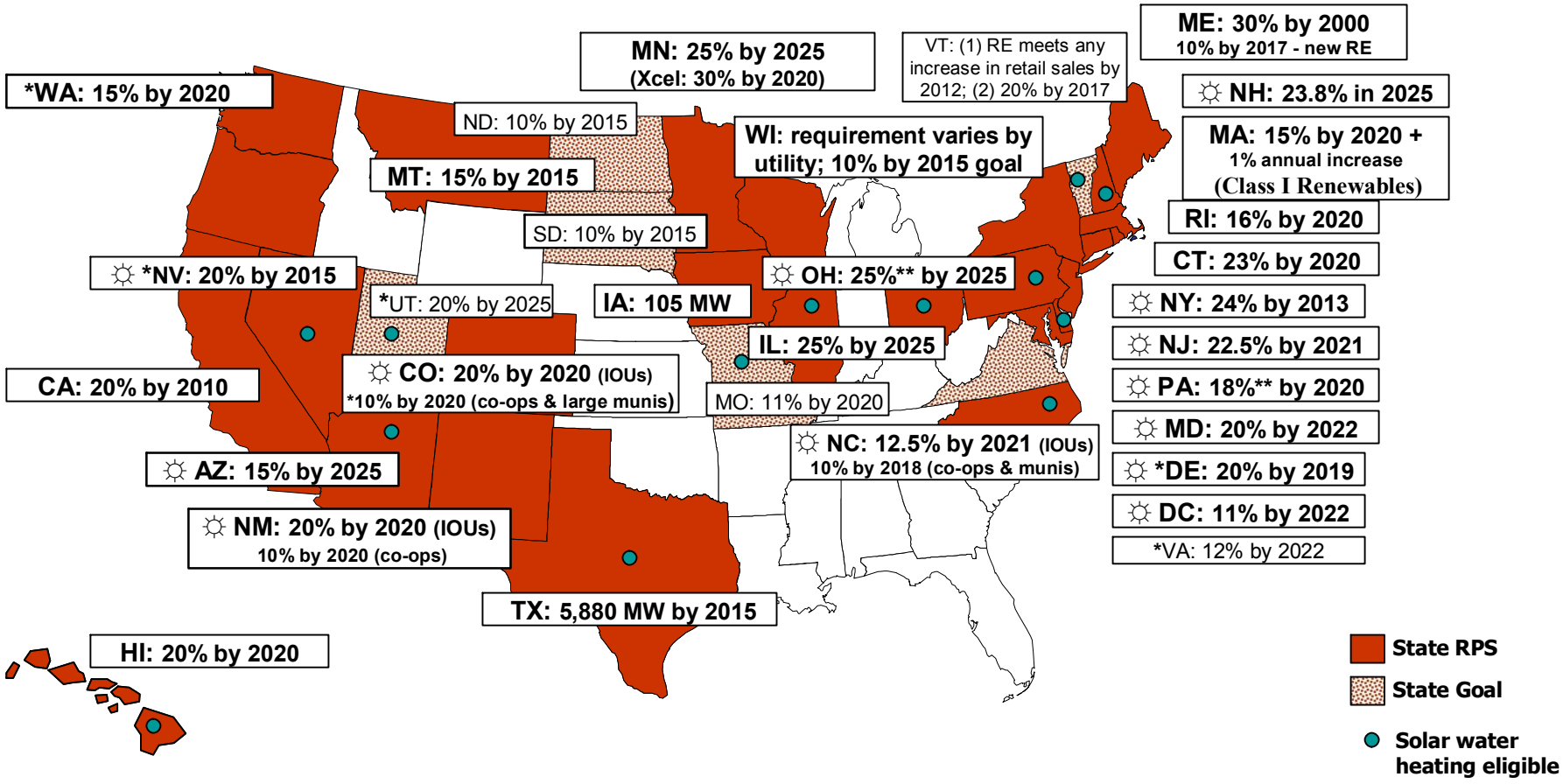
RENEWABLE ENERGY

DSIRE: www.dsireusa.org **October 2008**



TRANSMISSION

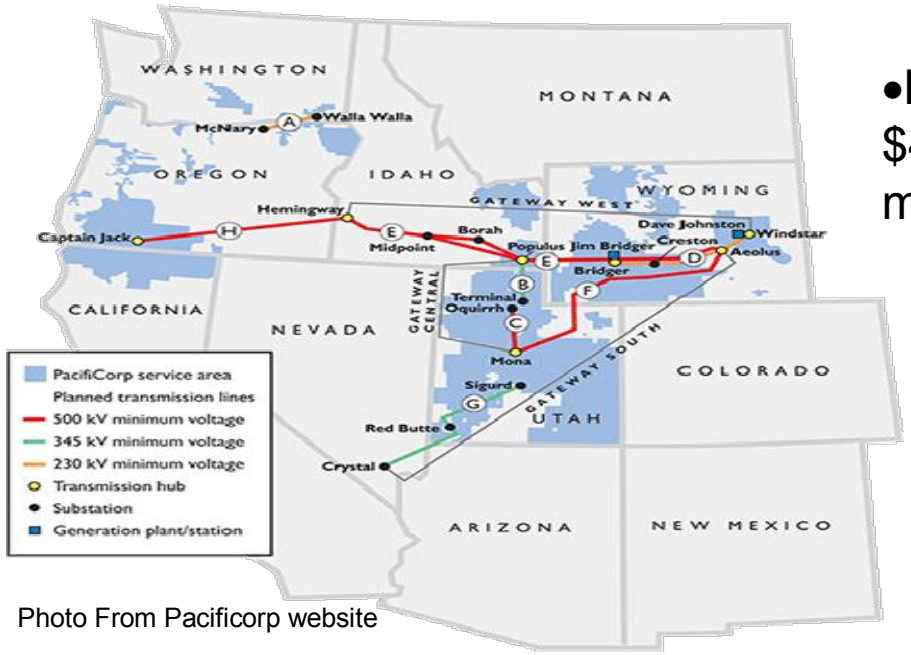


Photo From Pacificorp website

•Energy Gateway Transmission Project: $4B project, Utah, OR, ID, WY, 1,700 miles of new lines

The following new transmission lines are proposed or recently built:

- Ben Lomond to Gentile Street – 20 miles, 5 substations
- Camp Williams to 90S – 11 miles
- Herriman – 7 miles, plus substation
- Pleasant Grove – Section upgrades
- Thief Creek to Silver Creek – 40 miles
- Milford Wind Corridor Project – 88 miles
- Raser Thermo Plant – 6.5 miles, potential of 20 more
- (FYI - Spanish Fork Wind Project – only 1-2 miles from Paul Clements – RMP)

PIPELINES

Photo from UNEV Pipeline LLC Website

Holly-UNEV – Petroleum pipeline from Woods Cross to Las Vegas ~350 miles in Utah

Holly Energy Company

STATUS: At this time the BLM is compiling the Draft Environmental Impact Statement (EIS) with internal review.

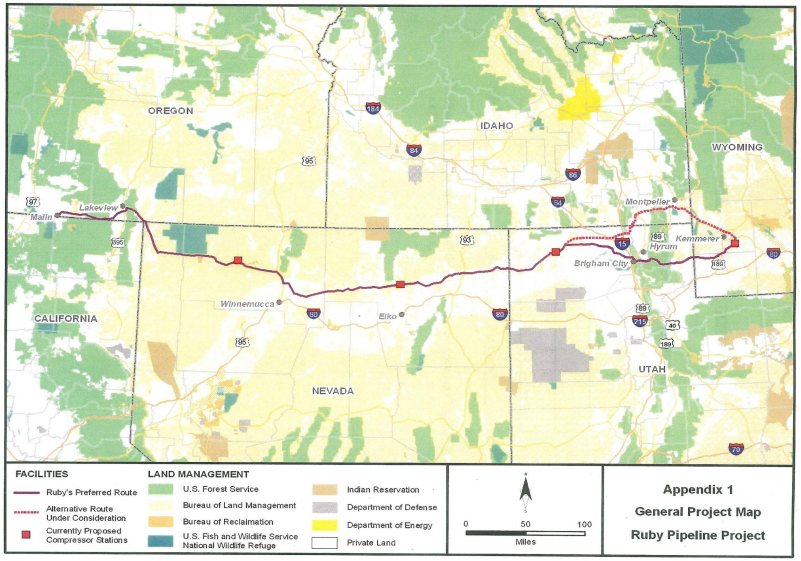


Photo from FERC Mailing

Ruby Pipeline - Natural gas pipeline from Opal WY to Malin, OR, through Utah, 670 miles

El Paso Natural Gas Corporation, Ruby Pipeline Company

STATUS: Scoping period for the EIS by FERC will close on Oct. 29, 2008.

Spanish Fork Wind Power Plant

Photo from Deseret News August 29, 2008,
Stuart Johnson

- August 2008
- 9 Turbines with18.9 MW Capacity
- 55,000 MW production = 6,100 average homes
- Spanish Fork still uses land for culinary water and mining
- The school district receives $1.267 Million in the first 20 years of the project.
- 20 MW Turbine = $4.78 million, 12 long term jobs, plus additional jobs and economic impact during construction
- GHG Offsets 88,000 lbs SO2; 241,000 lbs NOX; 115,000 CO2

UT Thermo Springs Geothermal

Photo courtesy of Raser Technologies 2008

- Beaver, UT
- Groundbreaking in May 2008
- 10 MW in 2008, up to 235 MW future development
- Raser Heat Transfer Technology = patented liquid that has a lower steam point.
  - Allows more low-temperature geothermal production sites
  - Allows more economical sites using shallower water
- $35 Million dollars for construction, $15 million for well development
- 10 MW will replace 60,000 tons CO2/year

Utah Renewable Energy Zone Task Force

- Governor Created July 30, 2008
- Held 3 meetings
- Draft reports on Solar, Geothermal and Wind completed
- Final report due to Governor November 13, 2008
- Will provide separate briefing to Legislature

ENERGY PRODUCTION IN UTAH

REVISED 10/16/08

Production	
Coal	611.1 TBtu
Crude Oil	104.0 TBtu
Natural Gas	355.1 TBtu
Yellowcake	
Hydroelectric (64)*	285,892 kW
Geothermal (1)*	34,000 kW
Biomass (2)*	4,800 kW
Wind (5)*	19,859 kW
Solar (30)*	704 kW
Electricity Production 2007	44,856 GW
Fossil Fuels	83 %
Natural Gas	15 %
Renewables	2 %
Proposed Production	
Biomass (2)*	5,250 kW
Geothermal (6)*	244,000 kW
Solar (2)*	2,020 kW
Wind (4)*	711,200 kW
Coal (3)*	1,330 mW

* Production as of 9/18/08

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- Promote study of nuclear power;
- Promote development of resources and infrastructure reducing dependence on international energy sources;
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Utah Energy Policy – Current Actions

- Promote development of nonrenewable resources
  - "Development of America's Strategic Unconventional Fuels," Task Force on Unconventional Fuels
  - Support ending moratorium on BLM funding for Oil Shale program
  - USTAR technology development, including carbon capture and sequestration technology
  - Research, development and deployment of clean energy technology
  - Timely permitting actions

Utah Energy Policy – Current Actions

- Promote development of renewable resources
  - Blue Ribbon Advisory Committee review of Renewable Energy Initiatives
  - Utah Renewable Energy Zone study
  - Western Renewable Energy Zone study
  - Improve access to transmission
  - Recognize economic development opportunities
  - Produce 20% of energy from renewables by 2025

Utah Energy Policy – Current Actions

- Promote study of nuclear power
  - Legislative review through Public Utilities Interim Committee
  - Require a federal program for high-level nuclear waste management, including reprocessing and permanent disposal

Utah Energy Policy – Current Actions

- Promote development of resources and infrastructure; reducing dependence on international energy sources
  - WGA initiative on energy transmission and transportation corridors
  - Diversification of energy resources; encouraging development of nonrenewable and renewable resources
  - Maintenance of resource databases and evaluation by Utah Energy Program, Utah Geological Survey
  - Opportunities for increased efficiency in Transportation. Utilization of public transit, alternative fuels, and performance purchasing

Utah Energy Policy – Current Actions

- Pursue energy conservation, energy efficiency and environmental quality
  - Improve Energy Efficiency 20% by 2015
  - Reduce greenhouse gas emissions to 2005 level by 2020
  - Blue Ribbon Advisory Council on Climate Change
  - Provide training on energy efficiency building codes
  - Western Climate Initiative
  - The Climate Registry
- Streamline regulatory processes and encourage expedited federal action
  - Environmental reviews for oil and gas exploration
  - WGA initiative on energy transmission and transportation corridors
  - Participate in federal resources reviews

Utah Energy Policy – Current Actions

- Provide an environment for stable consumer prices
  - Diversified energy portfolio
  - Regulatory practices and policies that encourage energy efficiency
  - Development of technologies to reduce environmental impacts
  - Develop energy resources to meet increase demand
  - Provide certainty for the nonrenewable and renewable resource development

In Summary

- Diversify Energy Portfolio of Renewables and Nonrenewables
- Improve Energy Efficiency
- Improve Environmental Quality and Reduce Greenhouse Gases
- Develop Transmission and Transportation
- Encourage Energy Security and Independence
- Promote Economic Development
- Maintain Quality of Life

State of Utah
Governor's Blue Ribbon Advisory Council on Climate Change

www.climatechange.utah.gov

Utah Energy Efficiency Strategies: Policy Options

http://www.utah.gov/energy

Western Climate Initiative

www.westernclimateinitiative.org

THE CLIMATE REGISTRY

www.theclimateregistry.org